**ADHESION KINETICS OF FUNCTIONALIZED NANO-PARTICLES UNDER HIGH SHEAR CONDITIONS**

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Arterial thrombosis, the formation of blood clot within an artery, is a complex process that consists of multiple steps. These steps are orchestrated by three main factors: high shear flow, prothrombogenic surface (collagen), and blood components mainly von Willebrand factor (vWF) and platelets. One of the essential early events in thrombus initiation under high shear conditions are the interactions between vWF and platelet's receptor GPIbα. Here we study the adhesion kinetics of platelet's GPIbα receptor functionalized-nano particles on different coated-channels under defined hemodynamic conditions.

Polystyrene particles of 200nm were functionalized with Glycocalicin, the extracellular domain of platelet's GPIbα receptor, and bovine serum albumin (BSA). These functionalized NPs were perfused on vWF and collagen-coated channels, while their deposition were quantitatively evaluated by time-lapse fluorescence microscopy. Our results show that glycocalicin-coated particles exhibit shear-stress enhanced adhesion unlike BSA particlesand tht their adhesion is more selective vWF coated-channels compared with collagen coated-channels.
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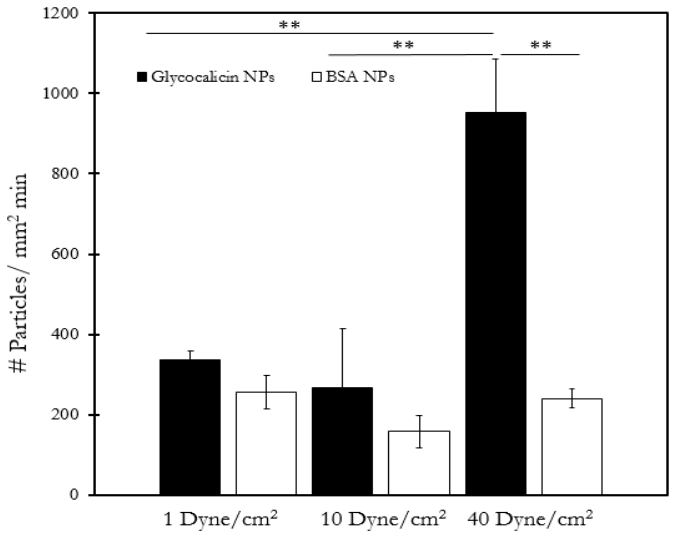


*Figure 1 – Glycocalicin and BSA-Functionalized NPs adhesion rate on vWF -coated channels at different shear stresses.*